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SOVIET BLOC USE OF WESTERN-PRODUCED PHOTOGELATIN

Photogelatin is a highly strategic commodity, for which the Soviet Bloc is almost totally dependent on Western sources of supply. Principal Western suppliers are Belgium, France, the Netherlands, Switzerland, the United Kingdom and West Germany. Annual shipments to the Bloc total only some 350-400 tons. Since the gelatin is packed in standard 100-pound gunny sacks, it can be transported by truck, train or ship. Western-origin gelatin has been shipped to East Germany, Czechoslovakia, Hungary, Poland and the USSR, with most of it going to East Germany. Purity and clarity of the gelatin are so vital to the production of high-quality film that testing for these characteristics is an almost constant process. Samples from each incoming bag are tested, and any shipments which do not meet production specifications are blended with a higher-quality gelatin to produce the desired grade. The gelatin is tested again after blending and before coating. Emulsion batches range from 10 pounds to 25-30 pounds, depending on the kind of film being produced, and the gelatin content of the finished emulsion is between 95% and 99%, again depending on the kind of production.

A. Importance, Supply and Characteristics of Photogelatin

1. Importance

Photogelatin is a highly strategic commodity which determines the quality of photographic film for military operations such as reconnaissance, map making, gun cameras and guided missiles. Its shipment to the Soviet Bloc is not restricted by international agreement because it is in plentiful supply in the Free World. Photographic gelatin is the highest grade of gelatin, and within this grade emulsion gelatin is the purest quality.

2. Soviet Dependence on Western Supplies

Although some photographic gelatin is produced in the USSR and in East Germany, its quality has been low; therefore dependence on Western sources has been almost total. Because improvement of quality of the Soviet Bloc product is a matter principally of employing more exact control techniques, probably the quality standard has been raised. However, Soviet Bloc supplies of the highest quality product are still insufficient.

3. Characteristics

The equipment used in the manufacture of photographic gelatin is relatively simple, although quality production requires exact control procedures as well as high grade raw materials. The finished gelatin is quite stable and can be stored for long periods of time without deterioration. Any impurities which the gelatin might pick up during storage can be quite easily refined out, given a sufficiently high quality product to begin with.

B. Western European Suppliers of Photogelatin to the Bloc

1. Countries Which Ship Photogelatin to the Bloc

Supplies of photogelatin have been shipped to the Soviet Bloc from Belgium, France, the Netherlands, Switzerland, the United Kingdom and West Germany. It has not been established definitely that shipments will continue from all these countries, but in the absence of international restrictions on such trade it is unlikely that they will abstain from it. A list of the plants from which gelatin has been shipped is found in Appendix 1.

2. Amounts Supplied

These firms ship about 350-400 tons of photogelatin annually to the Soviet Bloc. No estimates of 1955 shipments are available, but they will probably continue at present levels, since requirements are steady. In 1954, the following country breakdown of shipments to East Germany was recorded:

France	180 tons
Netherlands	80 tons
Belgium	30 tons
West Germany	30 tons
	320 tons

3. Transportation of Gelatin

In production, purified gelatin is usually poured in sheets, and when set these sheets are broken up for packing. In some large plants the liquid gelatin may be poured onto a drum mold and when set flaked off mechanically, as is commercial edible gelatin. However, broken sheet is the more usual form. The gelatin is packed in standard 100-pound gunny sacks and can be transported by truck, train or ship. It is probably shipped in carload lots, about 8 tons each.

Routes of gelatin shipments are not known definitely. That from the principal West German supplier, Deutsche Gelatinefabrik in Goppingen, has been routed through Switzerland, while some of the gelatin from France enters through Prolestzelle. Some has been transshipped via the United Kingdom and the Netherlands. Whether these routes will continue to be used is not known. No information is available regarding financing of these shipments.

4. Soviet Bloc Countries Receiving Western-Produced Gelatin

Gelatin from the West is known to have been shipped to Czechoslovakia, East Germany, Hungary, Poland and the USSR, with the great majority of it going to East Germany. The only East Bloc plants known to have received

shipments are listed in Appendix 2. Their storage capacities are not known, but since photogelatin is in short supply in the East it is doubtful that they maintain anything more than normal working inventories, about 40 tons.

C. Technical Aspects of Use of Gelatin

1. Purpose of Testing

Purity and clarity of photographic gelatin are of utmost importance in the manufacture of high-quality film. Other characteristics which must be carefully controlled are moisture content, swelling and presence of ions. So closely must these factors be controlled that testing of the gelatin is an almost continuous process.

2. Frequency of Testing

To assure uniform quality, test samples are taken from each bag in a shipment of gelatin. If tests demonstrate that the quality of the incoming gelatin is too low, it is blended with gelatin of a known higher quality to bring the resultant blend up to specifications. The blended gelatin must be aged for about a week before use. In addition to testing on arrival, the gelatin is tested after blending and before coating. The size of test samples taken from incoming shipments varies from one-half to one kilo; samples of blended gelatin tested are approximately one-half kilo.

3. Emulsion Batches

The size of emulsion batches varies with the kind of film being produced. It may range from 10-pound batches for small film to batches of 25-30 pounds. The gelatin content of the finished emulsion also varies according to kind of production, but is usually between 95% and 99%.

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